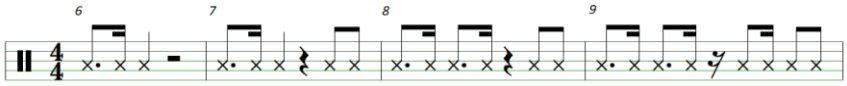
Question Number	Question	Mark
1(a)	Identify the most appropriate quantise value for the drums.	1
	Acceptable Answers	
	B 1/16	

Question Number	Question	Mark
1(b)	Notate the hi-hat rhythm in bars 6-9.	4
	Acceptable Answers	
		

Question Number	Question	Mark
1(c)	Describe the reverb used on the clap in bars 16-17.	2
	Acceptable Answers	
	Gated (1) 1s reverb time [Allow 0.5s – 1.5s] (1) Bright (1) Short pre-delay (1) Flutter echo (1)	

Question Number	Question	Mark
1(d)	Delay has been introduced to the drums at the end of bar 33. Identify the settings that have been used.	3
	Acceptable Answers	

Control	Setting
Time (note value)	Minim / 2 / 1/2 (1)
Feedback (%)	Accept 30-70 (1)
High cut (Hz)	Accept 800-4000 (1)

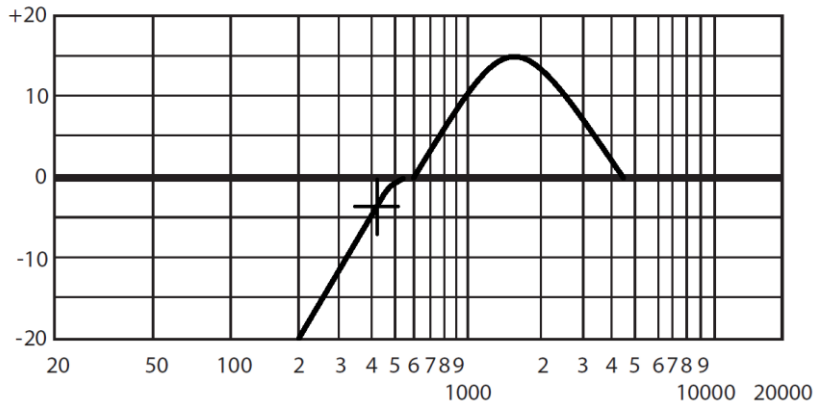
Question Number	Question	Mark
1(e)(i)(ii)	Bars 12-15 of the bass part are notated below. (i) Fill in the four missing pitches (each marked by an asterisk). (ii) Circle the note on the score that has pitch bend	5
	Acceptable Answers	

Question Number	Question	Mark
1(e)(iii)	Identify the pitch bend range. Put a cross in the correct box.	1
	Acceptable Answers	
	C 12	

Question Number	Question	Mark
2(a)	Identify the highest note velocity in the MIDI file.	1
	Acceptable Answers	
	125	

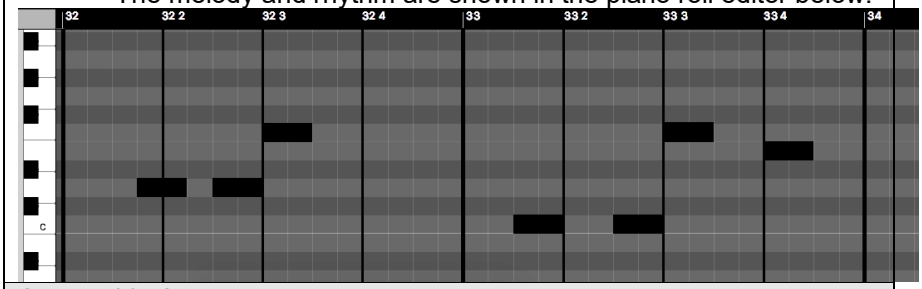
Question Number	Question	Mark
2(b)	Create a synth sound that matches “synth example.wav”. (i) Ensure that the octave matches the example. (1) (ii) Use a saw wave with the stereo effect in the example. No other effects should be present. (2) (iii) Ensure filtering matches the example. (1) (iv) Copy the amplitude envelope of the example. (3)	**7**
	Acceptable Answers	
	“synth example” was 0:46-0:50 (or an equivalent location for candidate responses with more/less silence at the start of the CD track).	
	Synth timbre	
	(i) Correct octave and pitches throughout with polyphony (1)	
	(ii) Saw wave (1). Allow square or pulse. Stereo chorus (1). Allow other subtle/similar modulation effect. *Award 0 if any further FX are added.*	
	(iii) Medium static cutoff frequency with no resonance (1)	
	(iv) Amplitude & pitch envelope A=0 (amplitude and pitch) (1) D and S on max (1) R slight release audible on short notes (1)	
	If synth is not soloed, has other effects, or the metronome is switched on, assess what can be heard clearly. If instrument is not a synthesiser (e.g. bass guitar/piano) then award (i) only. If there is no evidence of the synth timbre outside of bars 25-26 then award 0.	

Question Number	Question	Mark
3(a)	Identify the response time of the vocal pitch correction.	1
	Acceptable Answers	
	A 1ms	

Question Number	Question	Mark
3(b)	In bars 22-25, EQ has been applied to the vocals. On the graph below, illustrate the two EQ curves used on the vocals. (i) Label the two axes. (2) (ii) Draw the mid-range EQ used to add a hard edge to the vocals. (3) (iii) Draw the high pass filter used to thin the vocals. (3) (iv) On the curve you have drawn for part (iii), draw a cross to indicate the high pass filter cutoff frequency. (1)	9
	Acceptable Answers	
	(i) Frequency/Hertz/Hz (1) Amplitude/magnitude/volume/dB/gain (1) (ii) Mid point of peak 900Hz and 3kHz.(1) Peak curve. (1) Boosts between 10-20dB (1) Max 1 if any additional cuts below 0dB (iii) HPF starts on x-axis 300-900Hz but must be lower than the mid EQ (1) HPF cuts to $-\infty$ (1) HPF with steep, not vertical curve that is steeper than 45º AND hits $-\infty$ (1) Max 1 if any additional boosts below 300Hz. (iv) Cutoff marked between -1dB and -5dB on the HPF curve (1). Allow cross at any point on graph as long as it is in vertical alignment with the -1dB and -5dB range of HPF curve. Allow LPF Fc if clear.  	

Question Number	Question	Mark
3(c)(i)	Compression has been added to the vocal. Describe the settings used.	2
	Acceptable Answers	
	High ratio / accept 5:1 or higher (1) Low threshold (1) High gain make-up (1) Short attack / less than 50 ms (1) Short release / less than 100 ms (1)	

Question Number	Question	Mark
3(c)(ii)	The compression has been added post EQ in the signal chain. Explain why putting compression post EQ is particularly important in this case.	2
	Acceptable Answers	
	The EQ has a high dB boost on the peak (1) causing sudden peaks in the vocal (1). The compressor can control the peaks if placed post EQ (1).	

Question Number	Question	Mark
3(d)	Complete the vocal part for bars 32-33 in your music production software. • Use the vocal syllable heard in bar 32. • Bars 32-33 must have the same melody and rhythm as bars 30-31. • The melody and rhythm are shown in the piano roll editor below.  	8
	Acceptable Answers	
	Pitch and rhythm in bar 32-33: Correct rhythm (1). D (1) F (1) C (1) E (1) Sample editing: The beginning of the sample is clean: it has been edited with no clicks, has not been cut off and no timing issues due to the edit not being tight (1). The end of the sample: it has been edited with no clicks, has not been cut off (1). The timbre the same as the original sample: the formant is correct / no intrusive artefacts (including the reverb tail) / no change of level (1). Max 1 if the melody is copy and pasted from bar 30-31. If not soloed, then assess pitch and rhythm but not sample editing. When vocals are not sampled and re-pitched award 1 for an unsuccessful attempt: • if the melody is copy and pasted from bar 30-31. • if the correct melody is on a MIDI sound. • if other parts of the vocal are affected by pitch processing.	

Question Number	Question	Mark
4(a)	Describe how you would capture an electric guitar using close mic techniques. Describe how you would capture an electric guitar using DI. Identify the advantages of each method.	16
	Acceptable Answers	
	Underlined technical terms must be spelt correctly Tune guitar (1) Adjust settings on amplifier (1): gain/distortion (1), EQ (1), reverb (1), master volume (1) Ensure guitarist is angled/positioned so that hum is reduced (1). Short cable to reduce noise (1) Remove any unused pedals to reduce noise (1) Ground lift to reduce hum (1) **Close mic** Mic up amplifier (1). 1-12 inches (1) away from cone (1). Proximity effect (1) bassier tone / increased low frequencies (1). Centre of cone (1) brighter / increased high frequencies (1). Edge of cone (1) warmer / decreased high frequencies (1). Dynamic (1) can withstand high volumes (1). Lack of high frequency response (1) warms up tone / prevents harsh tone (1). Condenser (1) needs pad (1) to prevent distortion (1). HPF (1) to reduce rumble/LF (1) and proximity effect (1). Good high frequency response brighter (1) for lead guitar (1). Additional mic on rear of speaker (1) warmer tone (1) could be out of phase (1). Advantages: Captures character of amplifier (1) and speaker cabinet (1). Valve amps (1) are warm / have saturation (1). Transistor/solid state (1) amp technology preferred for hard clipping distorted tones (1) Lo-fi speaker warms up sound / reduced high frequencies / less harsh (1) especially for distorted tones (1). Spring reverb in amp captured (1). **DI** Direct injection (1). DI box (1) or instrument input on interface (1). Credit description of impedance / level matching (1). Very clean / clinical tone (1) Software amp simulator (1) to emulate amp (1) and speaker (1) and mic type (1) and position (1). Advantage: Amp sound can be changed after recording / during mixing (1) on software. Credit description of re-amping using hardware (1).	

	Mistakes can be edited out more easily without the sustain added by distortion (1). Less spill from other instruments (1). Lower volume required so less noise leaking out of studio (1). **DI and mic combined (1)** Could be out of phase (1).	

Question Number	Question	Mark
4(b)	Figure 1 shows a dynamic microphone and a condenser microphone. Explain features of these microphones that can be seen from the pictures. Identify the advantages of each type of microphone.	16
	Acceptable Answers	
	In this mark scheme, italics mean that the mark should not be credited multiple times. Underlined technical terms must be spelt correctly XLR (1) balanced (1) less noise (1). **Dynamic microphone** *Cardioid (1) picks up sound from front and sides (1).* *Less ambience / noise (1).* less feedback (1) Front address (1) **Benefits of dynamic microphones** Generally inexpensive (1) Robust (1) Can withstand high SPL (allow volume) (1) Resistant to moisture (1) Lack of sensitivity reduces feedback (1) Good for live use (1) Does not require (phantom) power (1). Limited HF response makes them suitable for bass instruments / guitar amplifiers (1) Slow transient response introduces a form of acoustic compression (1) **Condenser microphone** Large diaphragm (1) Side address (1) Phantom power (1) 48V (1) The spot shows the front (1). Polar response / pick-up pattern switch (1) selects between different / combinations of capsules (1). Direction microphone picks up sound (1). Omni (directional) (1) picks up sound from all directions (1) picks up more ambience (1). *Cardioid (1) picks up sound from front and sides (1). Less ambience / noise (1).* Figure of 8 (1) picks up from front and back (1) good side rejection (1). Credit example of practical use of rejecting sides (1). Credit description of figure of 8 used for middle and side configuration (1). Pad/attenuation switch (1) reduces volume/sensitivity (1) dB (1) prevents distortion (1) with loud sound sources (1) credit example, e.g. drums, electric guitar amplifier (1). Credit any valid example of the choice of two attenuation amounts (1). High pass filter / HPF (1) to eliminate rumble/low frequencies (1) Hz (1). Reduce proximity effect (1). Credit any valid example of the choice of two cutoff frequencies (1). **Benefits of condenser microphones** Sensitive / pick up quiet sounds (1)	

	Flat frequency response (1) Good high frequency response / wide frequency range / brighter than dynamics (1) Good signal to noise ratio / low noise / wide dynamic range (1) Fast transient response (1)	

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(a)</td><td>Apply automated panning to the vocals. Only bars 4-5 should be affected; all other bars should be panned to the centre. From bar 4:
the first “la la day” should be panned centre
the second “la la day” should be panned hard left
the third “la la day” should be panned hard right.
Acceptable Answers<table><tr><th></th><th>Management & control of the vocal panning automation</th></tr><tr><td>3</td><td>C – L – R as directed</td></tr><tr><td>2</td><td>C – R – L, C – C – R, or C – L – C etc
OR
Audible moving panning during a word
OR
Not hard panned.
OR
Glitch / click on the edit</td></tr><tr><td>1</td><td>Erratic panning
AND/OR
Vocal panned in a single position other than centre.
AND/OR
The vocal do not reset to centre.
AND/OR
Vocal panned but other parts panned noticeably off-centre</td></tr><tr><td>0</td><td>There is no audible panning automation on the vocal.
OR
No mix present on CD.</td></tr></table></td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(b)</td><td>Listen to the effect on the vocals in bars 14-17. Recreate that effect in bars 18-21.
Acceptable Answers
Listen to vocals at 0:31 (second half of middle 8).

Quaver feel delay time (1)
Send amount (wet<=dry) and feedback≈35% (1)
Some kind of stereo width (1)

Max 2 if there is delay added /a volume change on the example delay in bars 14-17.

Max 1 if:
Other parts of the vocals are affected by the delay
OR
Not all of bars 18-21 is delayed.
OR
Vocals have delay but wrong effect added on any track except some tasteful reverb.

Award 0 if copy and pasted the first phrase delay</td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(c)</td><td>Apply an automated filter to the drums.
Only bars 22-25 should be affected.
Bar 25, beats 3 and 4 should not be filtered.
Use a low pass filter with a steep roll-off.
The cutoff frequency should be set to 20kHz at the start of bar 22.
Gradually decrease the cutoff frequency until bar 25 beat 2.
Bar 25 beat 2 should be just about audible.
Acceptable Answers
Listen to drums from 0:39-0:47 (rap section).<table><tr><td></td><td>Management & control of drum filtering</td></tr><tr><td>3</td><td>The cutoff frequency of the low pass filter smoothly falls throughout the whole rap section until 25:3. The cutoff in bar 22 is at 20kHz. The drums have a low cutoff frequency but are still audible in bar 25.</td></tr><tr><td>2</td><td>The cutoff frequency of the low pass filter smoothly falls throughout the rap section
BUT
There is an audible join at bar 22 or 25:3.
OR
No sense of diminuendo in either half of the rap section / cut off falls too quickly / not the full frequency range used / drums are inaudible in bar 25
OR
Filtering affects 25:3 & 25:4</td></tr><tr><td>1</td><td>A variable low pass filter is used to create some sense of diminuendo but:
OR
A jerky or static low pass filter or low-shelving EQ is used that creates a noticeable contrast in the rap section.
OR
Other parts of the drums are affected by the filtering
OR
Drums correctly filtered but other instruments have noticeable filtering / EQ</td></tr><tr><td>0</td><td>There is no clearly audible low pass filtering on the drums in bars 22-25.
OR
Wrong filter type
OR
No mix present on CD.</td></tr></table></td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(d)</td><td>Gate the bass.
Only bars 28-29 should be affected.
The drum track should trigger the side chain of the gate so that the bass plays in time with the kick drum and hand clap.
The hi-hats should not trigger the gate.
Acceptable Answers
Listen to 0:51-0:55.<table><tr><td></td><td>Management & control of bass gating
Bars 28-29 are crotchets in time with the kick and clap.</td></tr><tr><td>3</td><td>Keyed gate:
Bass only plays simultaneously with the kick and clap.</td></tr><tr><td>2</td><td>Keyed gate with correct rhythm but:
Only the attack of the bass can be heard because the threshold is too high
OR
29:4 is too short because it is not being triggered by the clap
OR
Release too long / fades
OR
Clicks because attack and release too short
OR
Audible join when gate is bypassed at 27-28 or 29-30
OR
Chattering gate</td></tr><tr><td>1</td><td>Keyed gate:
BUT
Other bars are affected
OR
Incorrect rhythm / Hi hats triggering the bass</td></tr><tr><td>0</td><td>There is no audible evidence of keyed gating on the bass.
No mix present on CD.</td></tr></table></td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(e)</td><td>Balance the mix.
Ensure that all of the tracks can be heard clearly.
Acceptable Answers<table>
<tr><td></td><td>Balance and blend
On CD ROM:sss
Drums quietest
Vocals moderate
Bass loudest</td></tr>
<tr><td>3</td><td>Balanced and blended across all parts of the mix. Vocals sit on top of mix. Drums drive the song.</td></tr>
<tr><td>2</td><td>Most tracks are balanced with some masking. A few misjudgements, e.g. chords louder than the vocal; or drums quieter than chords/bass; or vocals too loud.</td></tr>
<tr><td>1</td><td>Balanced so that one track is barely audible, or one track is too dominant. E.g. tracks are at the original volume.
OR
Additional tracks.
OR
Volumes of tracks are erratic

IGNORE previously assessed work:
e.g. inaudible drums due to incorrect filter cut-off in Q5c</td></tr>
<tr><td>0</td><td>No mix on CD
OR
One track missing</td></tr>
</table></td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(f)</td><td>Produce a final stereo mix.
Ensure that the mix output is at as high a level as possible.
It should be free from distortion.
Do not limit or compress the mix output.
Ensure that the beginning and the end of the music are not cut off.
Ensure that silences at the beginning and end do not exceed one second.
Acceptable Answers<table><tr><td></td><td>Presentation of mix</td></tr><tr><td>3</td><td>Beginning and end of mix does not cut out music or tails.
The beginning and end have less than 1 second of silence.
The mix output is near normalised with no distortion.</td></tr><tr><td>2</td><td>Beginning and end of mix do not cut out. The beginning and/or end have a silence of greater than one second.
OR
The mix output is too low OR is compressed OR there is some slight distortion OR is louder than “MS task 3”.
OR
Cut delay/reverb/bass/synth tail</td></tr><tr><td>1</td><td>Obviously chopped start or ending (not including tails).
OR
The mix output is unacceptably low or too high (distorted) OR excessive use of mix compression causes pumping
OR
Metronome has not been turned off.
OR
Any part is noticeably out of sync / out of tune / missing

IGNORE previously assessed work:
e.g. inaudible drums due to incorrect filter cut-off in Q5c, incorrect vocal rhythm in 3(d)</td></tr><tr><td>0</td><td>No mix present on CD.</td></tr><tr><td></td><td></td></tr></table></td><td>3</td></tr>
</table>